



## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2021-0156; Project Identifier AD-2020-01594-T]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Gulfstream Aerospace Corporation Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** The FAA proposes to adopt a new airworthiness directive (AD) for certain Gulfstream Aerospace Corporation (Gulfstream) Model GVII-G500 airplanes. This proposed AD results from flap yoke fittings with design features that cause decreased fatigue life. This proposed AD would require replacing the flap inboard and outboard yoke fitting assemblies and establishing a 20,000 flight cycle life limit for the fittings.

The FAA is proposing this AD to address the unsafe condition on these products.

**DATES:** The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <https://www.regulations.gov>. Follow the instructions for submitting comments.

- Fax: (202) 493-2251.

- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact Gulfstream Aerospace Corporation, Technical Publications Dept., P.O. Box 2206, Savannah, GA 31402; phone: (800) 810-4853; email: [pubs@gulfstream.com](mailto:pubs@gulfstream.com); website: <https://www.gulfstream.com/en/customer-support/>. You may view this service information at the Airworthiness Products Section, Operational Safety Branch, 901 Locust, Kansas City, MO 64106. For information on the availability of this material at the FAA, call (816) 329-4148.

### **Examining the AD Docket**

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0156; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, any comments received, and other information. The street address for Docket Operations is listed above.

**FOR FURTHER INFORMATION CONTACT:** Jeff Johnson, Aviation Safety Engineer, Atlanta ACO Branch, FAA, 1701 Columbia Ave., College Park, GA 30337; phone: (404) 474-5554; fax: (404) 474-5606; email: [jeffrey.d.johnson@faa.gov](mailto:jeffrey.d.johnson@faa.gov).

### **SUPPLEMENTARY INFORMATION:**

#### **Comments Invited**

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2021-0156; Project Identifier AD-2020-01594-T” at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to <https://www.regulations.gov>, including any

personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

### **Confidential Business Information**

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as "PROPIN." The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Jeff Johnson, Aviation Safety Engineer, Atlanta ACO Branch, FAA, 1701 Columbia Ave., College Park, GA 30337. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

### **Background**

During flight testing of a Gulfstream Model GVII-G500 airplane, when the aircraft was configuring for a steep approach test point, the crew received a flap failure message. After landing, inspection revealed that the left-hand flap track 'B' yoke had

become disconnected due to structural failure. Gulfstream's investigation to determine the root cause of the failure revealed that the flap yoke fittings for certain serial-numbered Gulfstream Model GVII-G500 airplanes have design features that cause decreased fatigue life. The unsafe design features include insufficient shaft diameter, a small fillet radius detail at the top of the shaft, and a rough surface finish allowance, which collectively attribute to a potential yoke fitting failure. These design features ultimately cause higher stress concentrations leading to premature and fast-fracture overload of the flap actuator yoke at the junction of the fitting shaft and yoke clevis.

This condition, if not addressed, could result in failure of the flap yoke fitting during flap transition, which could cause the flaps to stop moving. This, combined with additional failures in the flap actuator force limiter or flap yoke actuator disconnect, could result in asymmetric flap positions, leading to a loss of airplane control.

#### **FAA's Determination**

The FAA is issuing this NPRM after determining that the unsafe condition described previously is likely to exist or develop on other products of the same type design.

#### **Related Service Information under 1 CFR Part 51**

The FAA reviewed Gulfstream GVII-G500 Aircraft Service Change No. 032, Initial Issue, dated November 20, 2020 (Gulfstream ASC No. 032). This service information specifies procedures for replacing the flap inboard and outboard yoke fitting assemblies and upper bushings. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

## **Other Related Service Information**

The FAA also reviewed Gulfstream GVII-500 Customer Bulletin No. 045, Initial Issue, dated November 20, 2020. This service information specifies the compliance time and additional information for Gulfstream ASC No. 032. The FAA also reviewed Gulfstream Aerospace GVII-G500 Aircraft Maintenance Manual (AMM) Document Number GAC-AC-GVII-G500-AMM-0001, Revision 7, dated December 15, 2020. This document contains revised airworthiness limitations, maintenance checks, and inspections.

## **Proposed AD Requirements in this NPRM**

This proposed AD would require replacing the flap inboard and outboard yoke fitting assemblies and updating chapter 5 of your existing AMM to incorporate a 20,000 flight cycle life limit.

## **Differences Between this Proposed AD and the Service Information**

Gulfstream ASC No. 032 contains actions labeled “Required for Compliance” (RC), and the language in the ASC and in paragraph (h)(3) of this AD indicates that operators must comply with all actions labeled RC for compliance with this AD. However, this AD does not require all of the steps in Gulfstream ASC No. 032 that are labeled as RC. Operators only need to comply with the RC steps specified in paragraph (g) of this AD.

## **Costs of Compliance**

The FAA estimates that this AD, if adopted as proposed, would affect 85 airplanes of U.S. registry.

The FAA estimates the following costs to comply with this proposed AD:

**Estimated costs**

<b>Action</b>	<b>Labor Cost</b>	<b>Parts Cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Replace the flap inboard and outboard yoke fitting assemblies and update the existing AMM.	83.5 work-hours x \$85 per hour = \$7,097.50	\$8,015.00	\$15,112.50	\$1,284,562.50

**Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

**Regulatory Findings**

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Would not affect intrastate aviation in Alaska, and

(3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

#### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

#### **The Proposed Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

#### **PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

**Gulfstream Aerospace Corporation:** Docket No. FAA-2021-0156; Project Identifier AD-2020-01594-T.

#### **(a) Comments Due Date**

The FAA must receive comments on this airworthiness directive (AD) by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

#### **(b) Affected ADs**

None.

#### **(c) Applicability**

This AD applies to Gulfstream Aerospace Corporation Model GVII-G500 airplanes, serial numbers 72001 through 72085, certificated in any category.

#### **(d) Subject**

Joint Aircraft System Component (JASC) Code 5753, Trailing Edge Flaps

#### **(e) Unsafe Condition**

This AD results from flap yoke fittings with design features that cause decreased fatigue life. The FAA is issuing this AD to prevent failure of the flap yoke fitting. The unsafe condition, if not addressed, could result in failure of the flap yoke fitting during flap transition, which could cause the flaps to stop moving. This, combined with

additional failures in the flap actuator force limiter or flap yoke actuator disconnect, could result in asymmetric flap positions leading to a loss of airplane control.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Required Actions**

(1) Within 24 months after the effective date of this AD or within 500 flight cycles after the effective date of this AD, whichever occurs first, replace each flap yoke fitting assembly by following Sections III.A.2 through III.D of the Modification Instructions in Gulfstream GVII-G500 Aircraft Service Change No. 032, Initial Issue, dated November 20, 2020 (Gulfstream ASC No. 032).

(2) Within 24 months after the effective date of this AD, revise the existing Airworthiness Limitations section of the Instructions for Continued Airworthiness or aircraft inspection program for your airplane by establishing a life limit of 20,000 flight cycles for each flap yoke fitting part number 72P5755095A001, 72P5755096A001, 72P5755097A001, and 72P5755098A001.



Note 1 to paragraph (g)(2): Section 05-10-10 of Gulfstream Aerospace GVII-G500 Aircraft Maintenance Manual (AMM) Document Number GAC-AC-GVII-G500-AMM-0001, Revision 7, dated December 15, 2020, contains the life limit in paragraph (g)(2) of this AD.

**(h) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Atlanta ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in Related Information.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) For service information that contains steps that are labeled as Required for Compliance (RC), the following provisions apply.

(i) The steps labeled as RC, including substeps under an RC step and any figures identified in an RC step, must be done to comply with the AD. An AMOC is required for any deviations to RC steps, including substeps and identified figures.

(ii) Steps not labeled as RC may be deviated from using accepted methods in accordance with the operator's maintenance or inspection program without obtaining approval of an AMOC, provided the RC steps, including substeps and identified figures, can still be done as specified, and the airplane can be put back in an airworthy condition.

**(i) Related Information**

(1) For more information about this AD, contact Jeff Johnson, Aviation Safety Engineer, Atlanta ACO Branch, FAA, 1701 Columbia Ave., College Park, GA 30337; phone: (404) 474-5554; fax: (404) 474-5606; email: jeffrey.d.johnson@faa.gov.

(2) For service information identified in this AD, contact Gulfstream Aerospace Corporation, Technical Publications Dept., P.O. Box 2206, Savannah, GA 31402; phone: (800) 810-4853; email: pubs@gulfstream.com; website: <https://www.gulfstream.com/en/customer-support/>. You may view this referenced service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 901 Locust, Kansas City, MO 64106. For information on the availability of this material at the FAA, call (816) 329-4148.

Issued on April 28, 2021.

Gaetano A. Sciortino, Deputy Director for Strategic Initiatives,  
Compliance & Airworthiness Division,  
Aircraft Certification Service.

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